

DOUBLING AND HALVING

To multiply a number by four, we double it twice:

$$16 \times 4 \quad \text{double once} = 32 \\ \text{double twice} = 64$$

To multiply a number by eight, we double it three times:

$$13 \times 8 \quad \text{double once} = 26 \\ \text{double twice} = 52 \\ \text{double three times} = 104$$

We can use the double and halve strategy to get to an easy multiplication fact.

$$15 \times 18 \quad \text{Double 15 and halve 18} \\ 30 \times 9 \quad \text{This is an easier fact to work with.} \\ = 270$$

SPLIT STRATEGY

$$13 \times 25$$



Split one of the numbers.

$$(10 \times 25) + (3 \times 25) \quad \text{Work out the brackets.}$$

$$250 + 75 = 325 \quad \text{Add the answers together.}$$

COMPENSATION STRATEGY

When multiplying we can round to an easier number and then *adjust* or *compensate*.

Look how we do this with 29×4

29 is close to 30. We can do 30×4 in our heads: $30 \times 4 = 120$

We have to take off 4 because we used one group of 4 too many: $120 - (1 \times 4) = 116$

$$4 \times 29 = 116$$

INVERSE OPERATION

As we know, multiplication and division are *inverse operations*. $8 \times 9 = 72$

This means they do the reverse of each other: $72 \div 9 = 8$

We can use our knowledge of the times tables to help us answer division questions.